ATTACHMENT J.4.87

PACKAGING LOW-LEVEL RADIOACTIVE WASTE IN DRUMS

FOR SHIPMENT TO THE NEVADA TEST SITE

PT-0005

CONTROL NUMBER: [illegible]
SITE PROCEDURE PT-0005
REVISION NO. 4

PACKAGING LOW-LEVEL RADIOACTIVE WASTE (LLRW) IN DRUMS FOR SHIPMENT

PT-0005

Effective Date: 08/07/97

Originator (Subject Expert): S. Stierhoff — Date: 8/7/97

Checker Concurrence: J. Edney — Date: 8/7/97

Approved By: M. West, Packaging and Transportation FAM — Date: 8/7/97

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

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ISSUE AND REVISION SUMMARY

Revision	Date	Description of Issue or Revision
0	12-14-92	Separate procedure written, using information from SSOP-0024, for packaging LLRW in drums per Request No. S92-123, initiated by M. Hundley. SSOP-0075, SSOP-0078, and SSOP-0079 replace SSOP-0024.
1	10-04-94	Major revision to reflect company name change from WEMCO to FERMCO and update the procedure per Request No. S93-095, initiated by Lori Hurst. This document supersedes SSOP-0075, dated 12-14-92, Rev. 0.
2	03-30-95	Major revision to omit the labeling, marking, and inspecting sections and outline the latest responsibility changes per Request No. S94-174, initiated by E. Giess!. This document replaces SSOP-0075, dated 10-04-94, Rev. 1.
3	05-20-97	Major revision to incorporate IC95-031 and IC95-043 and update procedure per Request No. WR-0359; initiated by S. Stierhoff. This document supersedes PT-0005, dated 03-30-95, Rev. 2.
4	08/07/97	Major revision to incorporate IC97-051 and update Free Liquid Issue noted by the Nevada Test Site. This document supersedes PT-0005, dated 5-20-97, Rev. 3.

1.0 PURPOSE

This procedure provides the instructions for packaging low level radioactive waste (LLRW) in drums for shipment offsite.

2.0 SCOPE

2.1 This procedure outlines the steps for (1) inspecting the waste to be packaged, (2) preparing the empty drums, (3) filling the drums, (4) weighing the filled drums, and (5) securing the drums.

2.2 The packaging operation is applicable to Fernald Environmental Management Project (FEMP) personnel (including subcontractors) responsible for packaging LLRW in open-head drums at any packaging location of the FEMP site.

3.0 REFERENCES

3.1 EW-0001, Completing the Material Evaluation Form

3.2 PT-0003, Control and Issuance of Empty Containers at the FEMP

3.3 PT-0011, Evaluating Low Level Radioactive Waste (LLRW) Bulk Waste Streams for Shipment

3.4 MCA-I-018, Completing the Item Production/Certification/Identification Form

3.5 RM-0005, FEMP Lot Marking and Color-Coding System

3.6 QP-11.24, Real-time Radioscopic Examination

3.7 20-C-111, Transportation of Low Level Radioactive Waste and Nuclear Material

3.8 20-C-623, Receipt and Storage of Low-level Radioactive Waste and Nuclear Material

3.9 20-C-627, Liquid Removal from Containerized Low-level Radioactive Waste

3.10 20-C-912, Checking Scale Operation

3.11 20-C-910, Venting and Hydrogen Monitoring of Potentially Explosive Drums

4.0 RESPONSIBILITIES

4.1 Packager inspects waste and containers and packages waste per this procedure. Complies with any additional requirements specified by S&H.

4.2 Waste Acceptance overviews packaging to verify compliance with this procedure.

4.3 Safety & Health (S&H) provides a Radiological Control Technician (RCT) as requested. Determines appropriate respiratory equipment and any other employee protection.

4.4 Waste Tech verifies drums are empty and in acceptable condition before packaging. Verifies contents of drums. Coordinates the movement of drums. Verifies any rework of drums. Follows all applicable procedures.

4.5 Waste Characterization (WC) provides documentation supporting characterization of all LLRW packaged under this procedure.

4.6 Inventory Control provides bar code labels. Maintains records and inventory of drums. Tracks movement of empty and full drums.

4.7 Supervisor of Waste Generation Area specifies applicable scale procedures and standard tare weight of packages. Ensures packaging materials are available for Packagers. Ensures that only trained personnel package waste material. Ensures that personnel who package waste for shipment follow applicable procedures. Contacts S&H to determine the appropriate respiratory protection for the process being performed and the radiological surveys required for materials moving in and out of contamination areas. Contacts Radiological Control (RC) for a Radiological Work Permit (RWP) or other safety permits and ensures permits are obtained and signed prior to performing work. Provides packagers with the required respiratory protection and other personal protective equipment. Ensures Task Order is completed and details the scope of work to be done. Ensures packages are secured after packaging so unknown materials are not added. Ensures waste packages are weather-protected. Contacts S&H before opening any package of unknown radioactive material.

4.8 Motor Vehicle Operator (MVO) delivers empty drums to designated areas. Supports packager when performing scale inspection/test. Transports packaged waste to the applicable storage area.

4.9 Quality Assurance coordinates and performs Real-Time Radiography (RTR) operations, surveillances, and audits of the program.

5.0 GENERAL

5.1 Any circumstance which could have resulted in an intake of radioactive materials by inhalation, ingestion, or absorption shall be immediately reported to a supervisor. The supervisor immediately reports the circumstance of possible radioactive materials intake to the S&H Radiological Control (RC) Department for evaluation. When the suspect isotope is uranium, the employee(s) shall report to the Urine Sampling Station at the end of their shift to complete an FS-F-1458, "Incident Investigation Report" (IIR), and submit a urine sample. The employees shall also report to the Urine Sampling Station at the start of their next shift to submit a follow-up urine sample. When the suspect isotope is something other than uranium, the involved employees shall report to the Dosimetry Section of RC for further determination.

6.0 PREREQUISITES

6.1 Safety glasses with side shields shall be worn unless other eye protection is specified by S&H.

6.2 Respiratory protection provided by the supervisor shall be worn when required.

6.3 Gloves shall be worn when handling drums, operating equipment, and handling rough, sharp-edged, or contaminated material.

6.4 Neoprene rubber gloves shall be worn when handling hazardous chemical substances where skin contact is possible.

6.5 HEPA type filter vacuum cleaners or a vacuum system approved by S&H with a current di-sec, octyl phthalate (DOP) test label properly affixed to vacuum shall be used for cleaning.

6.6 An RWP must be approved and current.

6.7 Face shields shall be worn when removing lids of drums filled with liquids or during operations where personnel could be splashed with liquids.

6.8 Obtain the following items/supplies before preparing drums and packaging waste:

- paint stick
- black paint, red paint, white paint (as applicable)
- 15/16 inch combination wrench
- impact wrench and 15/16 socket
- drum labels (as applicable)
- absorbent pads
- rubber hammer

6.9 "Prohibited Materials" list (Attachment A) and packaging guidelines shall be displayed in the packaging area.

6.10 The FS-F-4178, "Process Area Waste Checklist" (Attachment B), shall be displayed in the packaging area or on the container when packaging Waste Stream ONLO000000001 and ONLO000000002 process area scrap.

6.11 An FS-F-3252, "Material Evaluation Form (MEF)," shall be initiated (per EW-0001) prior to filling container. WC will assign the material an MEF number before final characterization is complete, which occurs after sampling. Any waste acceptance criteria (WAC) for which compliance cannot be verified by Sampling and Analysis shall be addressed in the Task Order. Activities needed to bring the waste into WAC compliance (e.g., decant liquid, use additional absorbent, or packaging limitations) shall be described in the Task Order.

6.12 A minimum of two packagers shall package waste.

6.13 Packagers shall be qualified in the use of personnel protective equipment (PPE).

6.14 Employees shall be briefed on and sign the RWP (in black ink) before performing work.

6.15 Check material description codes before packaging to ensure venting is not required per 20-C-910 (see Table 2).

7.0 PROCEDURE

7.1 INSPECTING WASTE

Waste Tech

1. Ensure that WC has approved an MEF.

   A. If the waste characterization has been initiated, package it per this procedure.

   OR

   B. If the waste characterization has not been initiated, inform Supervisor to contact WC for disposition before continuing procedure. Secure container pending resolution.

Packager

2. Ensure the waste type to be packaged is not on the "Prohibited Materials" list (Attachment A) and can pass the "Process Area Waste Checklist" (Attachment B).

   NOTE: Packaging waste listed on the "Prohibited Materials" list or that does not pass the "Process Area Waste Checklist" is not permitted.

   A. If waste type is on the "Prohibited Materials" list or does not pass the "Process Area Waste Checklist," notify supervisor and set aside for alternative disposition before continuing procedure.

   OR

   B. If waste type is not on the "Prohibited Materials" list and passes the "Process Area Waste Checklist," continue procedure.

3. Visually check waste for free liquid (including ice).

A. If free liquid is present, notify supervisor to determine appropriate method for eliminating free liquid before continuing procedure.

OR

B. If free liquid is not present, continue procedure.

7.2 PREPARING AN EMPTY DRUM

Waste Tech

1. Request, obtain, and verify delivery and acceptability of approved containers for packaging per procedure PT-0003.

Supervisor

2. Specify the scale to be used for weighing the empty drums.
3. Specify the method of transporting the drum to the scale.
4. Ensure that the scale is correctly calibrated.

Waste Acceptance

5. Conduct periodic overview of container preparation per applicable department procedure.

Packager

6. Check the scale to be used per procedure 20-C-912.
7. Place drum on scale.
8. Tare weigh drum per applicable procedure.
9. Record the tare weight on the drum with a paint stick (see Attachment C).
10. Remove drum from scale.

Motor Vehicle Operator (MVO)

11. Move drum to loading area.

Waste Tech

12. Notify Waste Acceptance that the container has been prepared.

7.3 FILLING THE DRUM WITH WASTE MATERIAL

Supervisor

1. Verify there is an approved task order to perform work.

Waste Tech

2. Maintain communication with Waste Acceptance to permit them to view filling of drums.

Packager

WARNING

A RESPIRATOR AND OTHER PERSONAL PROTECTIVE EQUIPMENT, SPECIFIED IN THE HEALTH AND SAFETY PLAN AND PROVIDED BY THE SUPERVISOR, SHALL BE DONNED PRIOR TO FILLING CONTAINERS TO PREVENT INHALATIONS AND EXPOSURES.

NOTE: Any waste encountered in the packaging operation not covered by the MEF or that does not meet the "Process Area Waste Checklist" requirements shall be set aside and shall not be packaged without the Supervisor contacting WC for disposition instructions.

3. Remove lock ring and lid from empty drum.

4. Place absorbent pad on inside bottom of drum.

5. The amount of absorbent to add is shown in (Table 5) based on the material description code of the waste (Table 3), free liquids risk (Table 4) and weight of the waste and the type of absorbent being added (Table 5).

NOTE: The volume of waste to be packed may vary because the density varies according to waste type.

NOTE: For Waste Stream ONL0000000006 only residues assigned to the same Material Evaluation Form (MEF) will be packaged together in a single container for shipment.

6. Fill drum with LLRW ensuring the waste level remains three inches below top of drum or to weight capacity (see Table 1), whichever first applies.

7. Check Table 2 for materials requiring venting.

A. If material requires venting, vent containers per procedure 20-C-910 before continuing procedure.

OR

B. If venting is not required, continue procedure.

8. Ensure that the surface of the gasket and chime are clean.

9. Place lid on drum ensuring gasket is seated to maintain a tight seal.

10. Install bolt-type lock ring on lid with bold lugs pointing downward and positioned no more than six inches from drum seam. Tighten with impact gun and tap locking ring with rubber mallet, repeating step until all lugs are secure.

Waste Tech

11. Complete a "Process Area Waste Checklist" per PT-0011 (when applicable).

12. Initiate a Form FS-F-1945-1, "Item Production/Certification/Identification" 65 Card (Attachment D), for each container following MCA-I-018, "Completing the Item Production/Certification/Identification Form."

13. Install a tamper indicating device (TID) by placing the plastic tie around the locking ring and bolt.

14. Indicate on the 65 Card in the seal number area that a TID has been installed on the drum.

Packager

15. Complete the Material Packaging List (Attachment E).

NOTE: Addition inventory number can be added to the Material Packaging List.

16. Notify the supervisor that the drums are ready to be weighed.

7.4 WEIGHING THE FILLED DRUM

Supervisor

1. Specify scale for weighing the filled drum.

2. Specify the method of transporting drum to scale.

Motor Vehicle Operator (MVO)

3. Move drum onto scale.

Packager

4. Check scale to be used per procedure 20-C-912.

5. Weigh drum.

   A. If weight is not within limits, do the following:

      (1) Remove the TID, lock ring, and lid from drum.

      (2) Transfer waste from drum into approved container until gross weight of drum is within limits.

      NOTE: The approved container may be an underweight drum from the same lot or an empty drum from the same lot.

      (3) Change or add the waste description on the 65 Card and Material Packaging List, if needed.

      (4) Replace lid on drum.

      (5) Re-install bolt-type lock ring and new TID.

   OR

   B. If weight is within limits (see Table 1), continue procedure.

Motor Vehicle Operator (MVO)

6. Remove the drum from the scale.

Supervisor

7. Notify packager to label/mark drum requiring interim storage per RM-0005 and 20-C-623.

8. Complete required documentation and submit to Inventory Control.

Inventory Control

9. Allocate drum into Nevada Test Site (NTS) shipment, if applicable.

Packager

10. Mark the container number, shipment number, and the gross weight on the lid of the drum (see Attachment C) in indelible ink or paint.

11. Calculate net weight.

12. Record the weight on the 65 Card.

13. Complete an FS-F-4879, Material Packaging List.

14. Sign the 65 Card.

Supervisor

15. Sign 65 Card indicating accuracy and completeness.

16. Sign Section IV of Process Area Waste Checklist (Attachment B).

17. Forward 65 Card, Material Packaging List, and the Process Area Waste Checklist to Waste Tech.

Waste Tech

18. Review, sign, date, and transmit the 65 Card, Material Packaging List, and the Process Area Waste Checklist to Inventory Control and Waste Characterization.

19. For drums requiring interim storage, skip to Section 7.6.

Inventory Control

20. Print required bar code labels and submit to Packager.

Waste Tech

21. Send all drums for shipment (unless otherwise specified) for real-time radiography (RTR).

Quality Assurance

22. Check designated drums for prohibited items and free liquid per QP-11.24.

Motor Vehicle Operator (MVO)

23. Do one of the following:

A. If the container is acceptable for shipment (i.e. having no prohibited items, free liquid), return the drum to proper storage area for shipment.

OR

B. If the container is unacceptable for shipment (i.e. contains prohibited items, free liquid), continue with procedure and rework the drum.

Supervisor

24. Ensure that movement record is completed and submitted to Inventory Control for entry into the Sitewide Waste Inventory, Forecasting, and Tracking System (SWIFTS) per 20-C-111.

7.5 REWORKING DRUM FOR PROHIBITED ITEMS & FREE LIQUID

Packager

1. Remove TID, lock ring, and lid.

2. Check drum for prohibited items (e.g., spray cans) and free liquid (e.g., water).

   A. If a prohibited item is in the drum, remove it.

   OR

   B. If free liquid is in the drum, either add absorbent or decant per 20-C-627. Low-level waste shall contain as little free liquid as is reasonably achievable, but in no case shall the liquid equal or exceed 0.5 percent by volume of the external waste container.)

   OR

   C. If no prohibited item or free liquid is in the drum, continue procedure.

3. Replace lid, lock ring, and a new TID.

4. Send reworked drum back to Quality Assurance for RTR.

Waste Tech

5. Place a copy of the RTR Report (prepared by Quality Assurance) in shipping file given to Waste Acceptance.

7.6 PREPARING AND MOVING DRUM INTO INTERIM STORAGE

Inventory Control

1. Print required bar code labels and submit to supervisor.

Supervisor

2. Contact Waste Storage or request Task Order to determine proper storage location.

3. Direct drum movements into storage.

Packager

4. Apply bar code labels and complete drum movement.

Motor Vehicle Operator (MVO)

5. Move drums into storage.

Supervisor

6. Ensure drum movement record is submitted to Inventory Control for entry into SWIFTS per 20-C-111.

8.0 RECORDS

- FS-F-4178, Process Area Waste Checklist
- FS-F-1945-1, Item Production/Certification/Identification
- FS-F-4879, Material Packaging List

9.0 DRIVERS

9.1 NTSWAC, Nevada Test Site Waste Acceptance Criteria

9.2 49 CFR, Section 173

9.3 RM-0012, Quality Assurance Program

10.0 DEFINITIONS

10.1 Drum - A cylindrical, metal open-head container which meets Department of Transportation (DOT) and Environmental Protection Agency (EPA) requirements, and Nevada Test Site (NTS) acceptance criteria. See Table 1 for specifications.

10.2 Free Liquid - Any free flowing liquid or any liquid that readily separates from the solid portion of a waste under ambient temperature and pressure conditions. Ice is also considered a free liquid.

10.3 Low-Level Radioactive Waste (LLRW) - All radioactive waste not classified as high-level waste, spent nuclear fuel, transuranic (TRU) waste, uranium mill tailings, or mixed waste (MW).

10.4 Resource Conservation and Recovery Act (RCRA) - The Congressional Act that established safe and environmentally acceptable management practices for specific wastes. RCRA requires strict "cradle to grave" control, documentation, and proper management of hazardous wastes.

10.5 Rework - A waste container status indicator that means that a condition exists that does not allow this container to meet project specified acceptance criteria. Note: This is not necessarily a nonconforming condition if inspection is performed "For Information Only."

TABLE 1
WEIGHT LIMITATIONS FOR SHIPMENTS (SPECIFIC FIELD DRUMS)

DRUM SIZE	MAXIMUM GROSS WEIGHT
30 gallons	700 pounds
55 gallons	938 pounds
85 gallons	963 pounds
85 gallons overpack	932 pounds

TABLE 2
MATERIALS REQUIRING VENTING
(per procedure 20-C-910)

Material Description Codes										
039[1]	040	041	042	046	055	056	070	075	076	080
081	084	098	103	104	107	109	110	111	112	113
114	118	119	120	124	125	128	129	130	131	136
137	141	153	161	218	219	220	221	222	223	224
225	227	228	229	230	231	232	233	234	235	236
237	238	239	240	241	242	243	244	245	246	251
252	254	260	261	262	263	300 - 599	-	-	-	-

[1] MDC 039 with source codes 655-659 do not require vented drums and can be moved without restrictions.

TABLE 3
FREE LIQUIDS POTENTIAL CLASSIFICATION BY MATERIAL DESCRIPTION CODE

No Potential	Low Potential	Medium Potential	High Potential
MDC 004	MDC 003 MDC 005	MDC 011	MDC 001
MDC 055	MDC 008 MDC 017	MDC 026	MDC 002
MDC 056	MDC 024 MDC 025	MDC 042	MDC 007
MDC 081	MDC 027 MDC 029	MDC 099	MDC 012
MDC 119	MDC 030 MDC 033		MDC 018
MDC 222	MDC 034 MDC 035		MDC 020
MDC 223	MDC 036 MDC 037		MDC 021
MDC 227	MDC 038 MDC 047		MDC 026
MDC 234	MDC 049 MDC 058		MDC 039
MDC 308	MDC 060 MDC 061		MDC 041
	MDC 062 MDC 065		MDC 042
	MDC 066 MDC 070		MDC 043
	MDC 076 MDC 077		MDC 046
	MDC 082 MDC 084		MDC 054
	MDC 085 MDC 088		MDC 067
	MDC 100 MDC 101		MDC 068
	MDC 104 MDC 122		MDC 069
	MDC 125 MDC 129		MDC 091
	MDC 132 MDC 134		MDC 092
	MDC 137 MDC 143		MDC 170
	MDC 157 MDC 159		
	MDC 163 MDC 165		
	MDC 166 MDC 167		

NOTE: Potential for free liquid potential is based on physical characteristics at time of generation. Free liquids may be observed in containers with no, low, or medium potential materials due to previous storage on outdoor pads. If free liquids are observed, or if you are working with a Material Description Code not listed above, contact your supervisor for corrective action.

TABLE 4
FREE LIQUIDS RISK

MEF#	Free Liquids Risk	MEF#	Free Liquids Risk	MEF#	Free Liquids Risk	MEF#	Free Liquids Risk	MEF #	Free Liquids Risk
205	High	20008	High	30024	Medium	50106	Low	50344	Low
283	Medium	20009	High	30026	Medium	50107	Low	50348	Low
283	Medium	20014	High	30028	Low	50110	Low	50368	Low
580	Medium	20016	Medium	30030	High	50130	Low	50369	Low
830	Medium	20017	High	30035	High	50135	Low	50371	Low
901	Low	20023	Medium	30044	low	50137	Low	50372	Low
1088	Low	20025	High	30049	High	50144	Low	50374	Low
1099	Low	20026	Low	30051	Low	50149	Low	50376	Low
1244	Low	20034	Low	30052	Low	50150	Low	50377	Low
1260	High	20056	High	30054	Medium	50152	Low	50380	High
1284	Low	20059	Low	30056	High	50154	Low	50381	Low
1329	Medium	20063	Low	30058	low	50155	Low	50382	Low
1335	High	20064	None	30061	low	50156	Low	50383	Low
1346	Low	20067	None	30063	low	50163	Low	50388	Low
1349	Low	20072	None	30064	low	50167	High	50397	High
1401	Low	20073	Low	30068	High	50176	Low	50409	Low
1431	Low	20075	Low	30069	High	50181	Low	50411	Low
1453	High	20077	Low	30071	Low	50194	Low	50414	Low
1455	Low	20079	None	30072	Low	50196	None	60031	Medium
1532	High	20080	None	30077	Low	50206	Low	60068	High
1756	Medium	20081	None	30083	Medium	50212	Low	60091	High
1757	High	20082	Low	40207	Low	50214	Low	60109	Low
1859	Medium	20084	Low	50005	High	50215	Low	60111	High
1915	Low	20090	None	50006	High	50216	Low	60142	Low
1918	Medium	20091	Medium	50007	High	50229	Low	60144	Low
1929	Low	20098	Low	50009	High	50236	Low	60145	Low
1959	Low	20102	Low	50023	Low	50240	Low	60146	Low
1963	Medium	20108	Low	50024	Low	50241	Low	60154	Low
1964	High	20111	None	50030	Low	50245	Low	60164	Low
2075	Low	20122	None	50033	Low	50247	Low	60168	Low
2165	Low	20128	Low	50034	Low	50254	Low	60173	Low
2212	High	20135	Low	50050	Low	50265	None	60176	High
2223	Medium	20136	None	50057	Low	50269	Low	60184	Low
2262	Low	20137	None	50064	Low	50280	Low	60213	None
2426	Low	20151	Medium	50065	Low	50282	Low	60217	None
2427	Low	30001	High	50067	Low	50296	Low	60222	None
2462	Low	30002	Low	50077	Low	50299	Low	60243	None
2601	High	30003	Low	50080	Low	50300	Low	60268	None
2602	High	30004	Low	50082	Low	50310	Low	60308	High
2661	None	30008	Low	50086	High	50312	Low	60309	High
2663	Low	30013	Low	50088	High	50313	Low	60311	Low
2735	High	30015	Low	50092	Low	50314	Low	60312	None
2742	High	30016	Low	50097	Medium	50316	None	60314	Low
2884	High	30017	High	50101	High	50318	Low	60316	Low
10001	Low	30018	High	50104	High	50322	Low	60341	Low
20001	Low	30023	High	50105	High	50323	Low	60469	High

TABLE 5
VOLUME OF ABSORBENT MATERIALS NEEDED (IN QUARTS) BASED UPON FREE LIQUID POTENTIAL AND NET WEIGHT OF WASTE

Free Liquid Potential	Low Potential			Medium Potential			High Potential		
Net Weight of Waste (pounds)	Di.	RS	WW	Di.	RS	WW	Di.	RS	WW
250	0	0	0	1	1	1	3	2	2
500	0	0	0	2	2	2	6	5	4
750	1	0	0	4	3	2	9	7	6
1000	1	1	1	5	4	3	12	9	8
1500	1	1	1	7	6	5	18	14	11
2000	2	1	1	10	8	6	23	19	15
2500	2	2	1	12	10	8	29	23	19
3000	2	2	2	15	12	9	35	28	23
3500	3	2	2	17	14	11	41	33	26
4000	3	3	2	19	16	12	47	38	30
4500	4	3	2	22	18	14	53	42	34
5000	4	3	3	24	19	16	59	47	38
5500	4	4	3	27	21	17	64	52	41
6000	5	4	3	29	23	19	70	56	45
6500	5	4	3	32	25	20	76	61	49
7000	6	5	4	34	27	22	82	66	53
7500	6	5	4	36	29	23	88	70	56
8000	7	5	4	39	31	25	94	75	60

NOTES:

Di. = Dicalite
RS = RadSorb
WW = Water Works

1. Assumes a mass/volume factor of 2 pounds absorbent material per quart container for Dicalite (or equivalent).

2. Assumes a mass/volume factor of 0.5 pounds absorbent material per quart for RadSorb and Water Works (or equivalent).

ATTACHMENT A - PROHIBITED MATERIALS

PACKAGING GUIDELINES FOR WASTE GENERATOR	
Package has been properly prepared for closing when the following conditions exist:	
No liquids of any kind have been placed in container.	
Heavy/bulky items have been secured within container.	
All available space has been utilized efficiently.	
Prohibited materials (listed below) have been excluded.	
Packaging has not been damaged during loading.	
PROHIBITED MATERIALS AND EXAMPLES	
Compressed Gases	***Corrosive Materials***
unpunctured aerosol cans	*acid or caustic material*
gas cylinders with valves or plugs in place	*acidic*
Free Liquids	***Hazardous Waste***
water, ice, seepage, condensation,	*solvents, petroleum products,*
drinks, coffee, juices, pop, soaked rags,	*lead, mercury, batteries,*
fuel, oil, fluids, solvents, etc.	*pesticides, etc.*
Etiologic Agents	***Explosives***
medical waste	

ATTACHMENT B - PROCESS AREA WASTE CHECKLIST

Reference MEF # 270

LOW-LEVEL RADIOACTIVE WASTE PROCESS AREA WASTE CHECKLIST

S

SECTION I - GENERAL CONTAINER INFORMATION

1. PLEASE IDENTIFY THE TYPES OF WASTE IN THE CONTAINER:

☐ Scrap Metal ☐ Electrical Equipment
☐ Scrap Wood ☐ Glass
☐ Paper/Plastic/Rubber/Cardboard/Canvas/Rope

* IF OTHER THAN THE ABOVE ITEMS ARE IN THE CONTAINER PLEASE DESCRIBE THE ADDITIONAL WASTE AND THE PLACE OF GENERATION OF THE WASTE.

A

SECTION II - GENERAL RESTRICTIONS	YES	NO
1. ARE THERE FREE LIQUIDS IN THE CONTAINER/WASTE MATERIAL?		
2. DID THE WASTE ORIGINATE FROM A RADIOLOGICALLY CONTROLLED AREA?		
3. IS THE WASTE A KNOWN HAZARDOUS WASTE?		
4. DID THIS WASTE ORIGINATE FROM A HAZARDOUS WASTE MANAGEMENT UNIT?		
5. ARE ALL SURFACE AREAS VISIBLE? IF NOT, WHAT WAS THE MATERIAL USED FOR AND WHAT DID IT CONTAIN? _____		
6. ARE THERE EXCESS RESIDUES? IF YES, ANSWER QUESTION 7.		
7 COULD THE EXCESS RESIDUES BE REMOVED AND MANAGED SEPARATELY? IF NO, DESCRIBE THE RESIDUE AND WHERE IT ORIGINATED FROM.		

M

SECTION III - APPROVED WASTE CRITERIA	YES	NO
1 SCRAP METAL - IS THE WASTE ONE OF THE FOLLOWING: STEEL (INCLUDING STAINLESS), COPPER, ALUMINUM, IRON, BRASS, NICKEL, MONEL, TIN?		
2. SCRAP WOOD - IS THE WOOD NON-PRESSURE TREATED?		
3. PAPER/PLASTIC/RUBBER/CARDBOARD/CANVAS/ROPE - IS THE WASTE ONE OF THE FOLLOWING: PACKING PAPER, PACKING MATERIALS, NEWSPRINT, OFFICE PAPER OR PROTECTIVE CLOTHING GENERATED AT THE PACKAGING/INSPECTION SITE OR ANY TYPE OF PLASTIC , CANVAS OR ROPE?		
4. ELECTRICAL EQUIPMENT - IS THE WASTE ONE OF THE FOLLOWING: NON-ASBESTOS WIRING, CONDUIT, NON-MERCURY SWITCHES OR DRY-TYPE TRANSFORMERS?		
5. GLASS - IS THE WASTE ONE OF THE FOLLOWING: EMPTY GLASS CONTAINERS, INCANDESCENT LIGHT BULBS, WINDOW OR SIGHT GLASS, OR BROKEN GLASS FROM THESE SAME ITEMS?		

P

L

SECTION IV - CONTAINER INFORMATION

1. SPECIFIC DISCERNIBLE ITEMS APPROVED AS LLRW (NON-RCRA) BY WASTE CHARACTERIZATION SECTION: _____

_____
WASTE CHARACTERIZATION SIGNATURE _____ DATE

2. Packaging Date:	3. Inches Freeboard/Headspace:	4. Container Serial Number:
5. Container Inventory Number:	6. Container Type: ☐ S/L ☐ WMB ☐ DRUM ☐ OTHER, Specify:	
7. Approved By: _____ (Supervisor Signature/Date)	Accepted By: _____ (WMF Signature/Date)	

E

1	White	Waste Characterization	3	Yellow	Materials Control and Accountability
2	Blue	Low-Level Waste Handling and Disposal	4	Green	Waste Generator

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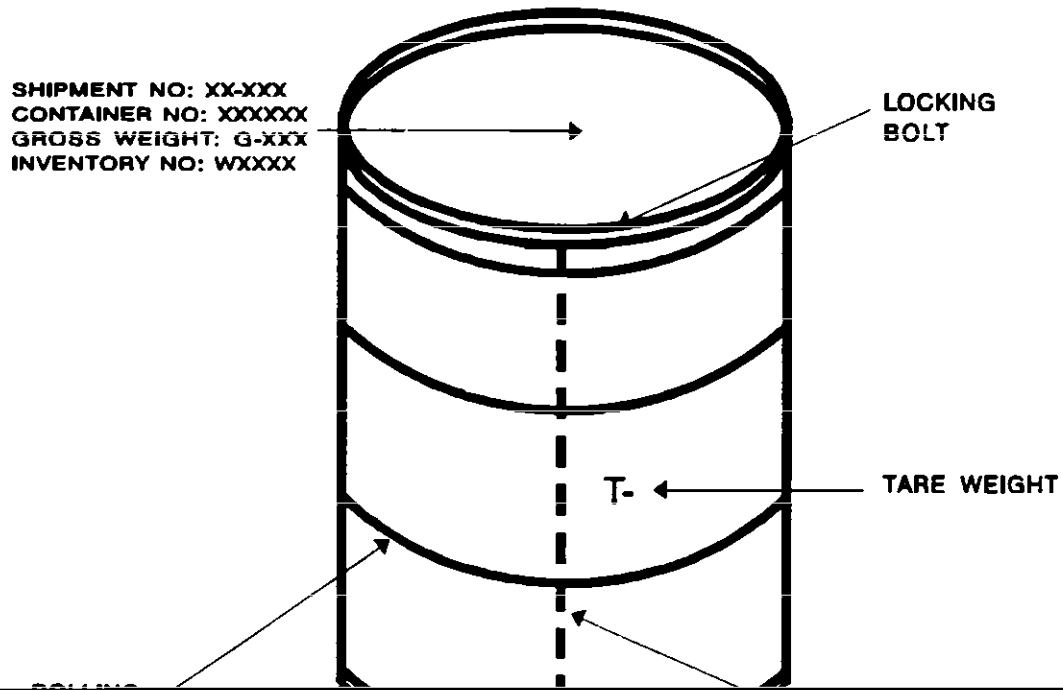
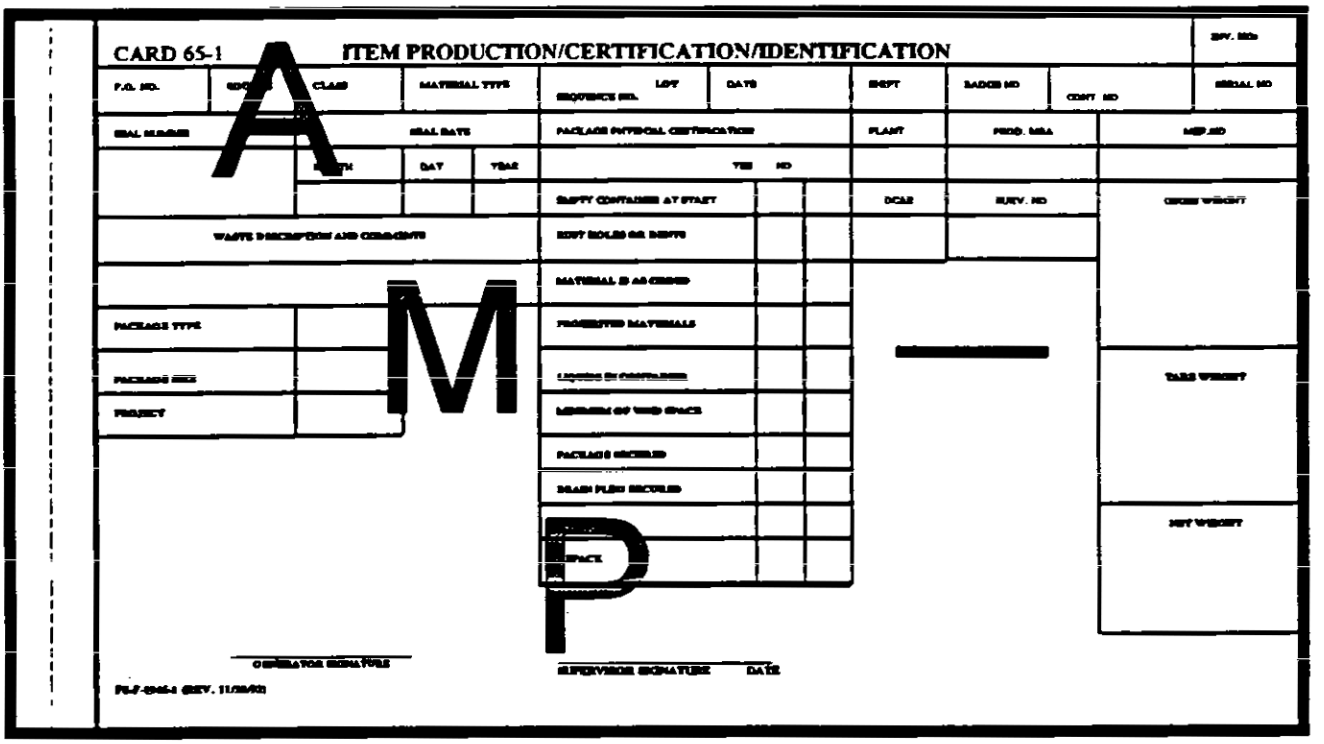
ATTACHMENT C - LOCATIONS FOR LLRW DRUM LABELING

TYPICAL LABELING OF NON-RCRA OR LOW-LEVEL RADIOACTIVE WASTE DRUM



ATTACHMENT D - ITEM PRODUCTION/CERTIFICATION/IDENTIFICATION



ATTACHMENT E - MATERIAL PACKAGING LIST

MATERIAL PACKAGING LIST

PACKAGING LOCATION _____ Date Filled _____

SERIAL NO. _____

INVENTORY NO. _____

TARE WEIGHT _____

RUST? YES _____ NO _____

HOLES? YES _____ NO _____

CONTAINER TYPE DRUM _____ WMB _____ ISO _____ TL _____

PROHIBITED ITEMS YES _____ NO _____

CONTENTS

_____

_____

_____

_____

_____

_____

_____

_____

_____

ARE CONTENTS DRY _____ WET _____ DAMP _____

GENERATORS BADGE # WASTE ACCEPTANCE PREP CHECK YES NO

DATE _____

_____ _____

_____ _____ MINIMUM OF VOID SPACE YES NO

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ATTACHMENT E - MATERIAL PACKAGING LIST (cont.)

MATERIAL PACKAGING LIST

Instructions

The following instructions are to be followed when filling out the Material Packaging List:

1. Fill in packaging location, serial number, inventory number, and tare weight.
2. Perform a physical check of the container check for holes and rust and mark accordingly.
3. Mark the container type.
4. As the container is being filled list all items being loaded into container. Be as specific as possible when filling in contents. Ensure no prohibited items.
5. Check if contents of container is "dry," "wet," or "damp" when loaded.
6. Sign after container is completely loaded.
7. Waste Acceptance to check "yes" or "no" in the area for prep check and date as such.
8. Mark minimum of void space "yes" or "no".